

**TECHNICAL REVIEW DOCUMENT**  
**For**  
**RENEWAL of OPERATING PERMIT 95OPWE001**

Thermo Power and Electric LLC – Greeley Facility  
Weld County  
Source ID 1230126

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June 2010  
Revised September, October and November 2010

**I. Purpose:**

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The current Operating Permit was issued January 1, 2006. The expiration date for the permit is January 1, 2011. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted August 10, 2009, comments on the draft permit and technical review document received on September 8, 2010, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at <http://www.cdphe.state.co.us/ap/Titlev.html>.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

**II. Description of Source**

This facility consists of a cogeneration facility defined under Standard Industrial Classification 4931. Electricity for sale is produced by two (2) combustion turbines and a steam turbine. Each combustion turbine serves a generator rated at 42.5 MW (name-plate) and the steam turbine generator is rated at 16.3 MW (name-plate).

The facility is located at 510 18<sup>th</sup> Street, in Greeley, CO on the University of Northern Colorado (UNC) Campus. This facility is located in an area classified as attainment/maintenance for carbon monoxide (CO). Under that classification, all SIP-approved requirements for CO will continue to apply in order to prevent backsliding under the provisions of Section 110(l) of the Federal Clean Air Act. This Area is classified as non-attainment for ozone and is part of the 8-hr Ozone Control Area as defined in Regulation No. 7, Section II.A.1.

Wyoming, an affected state, is within 50 miles of the facility. Rocky Mountain National Park, a federal Class I area is within 100 km of this facility.

Based on the information provided in the renewal application, no changes have been made to any of the significant emission units.

The summary of emissions that was presented in the Technical Review Document (TRD) for the renewal permit has been reproduced here. Since there have been no changes to permitted emission and/or fuel consumption limitations and no new emission units have been added to the facility, the potential to emit (PTE) has not changed. Both potential and actual emissions (in tons per year) at the facility are as follows:

	Potential to Emit (tons/yr)						
Emission Unit	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	HAPS
Turbine (T001)	20.8	20.8	10	535.5	45	6.24	See Table on Page 9
Turbine (T002)	20.8	20.8	10	535.5	45	6.24	
Total	41.6	51.6	20	1,071.	90	12.48	5.2

	Actual Emissions (tons/yr)						
Emission Unit	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	HAPS*
Turbine (T001)	3.4	3.4	1.6	88.2	7.4	1.0	0.16
Turbine (T002)	3.7	3.7	1.8	95.9	8.1	1.1	0.17
Total	7.1	7.1	3.4	184.1	15.5	2.1	0.33

\*only formaldehyde emissions were above the APEN de minimis level.

The criteria pollutant PTE shown above is based on permitted emission limits for the turbines. Note that there are no permitted emission limits for PM<sub>10</sub> for the turbines, PM<sub>10</sub> is presumed to equal PM.

Actual emissions are based on the information provided in the APENs included in a letter dated May 16, 2006 (2005 data).

The breakdown of HAP emissions by emission unit and individual HAP is provided on page 9 of this document. The PTE of HAP emissions is based on emission factors (formaldehyde from AP-42 and others from the 8/22/03 EPA memo for turbines), permitted fuel consumption limits and a natural gas heat value of 1020 Btu/SCF.

## MACT Requirements

Although the facility is not a major source for HAPS, the EPA has been promulgating rules for area sources (sources that are not major), those requirements that could potentially apply to this facility are discussed below:

### Paint Stripping and Miscellaneous Surface Coating at Area Sources (40 CFR Part 63 Subpart HHHHHH)

The final rules for paint stripping and miscellaneous surface coating were published in the Federal Register on January 9, 2008 and apply to area sources that perform paint stripping operations using methylene chloride, spray application of coatings to motor vehicles and mobile equipment and spray application of coatings that contain the target HAPS (chromium, lead, manganese, nickel or cadmium). As indicated in 40 CFR Part 63 § 63.11170(a)(2) and (3), spray applications (to motor vehicles and using coatings that contain the target HAPS) that meet the definition of facility maintenance are not subject to the requirements in this rule. The Division considers that any spray coatings of motor vehicles and mobile equipment and spray application of coatings that contain the target HAP at this facility would meet the definition of facility maintenance. The source indicated that none of the paint stripping chemicals used at the facility contain methylene chloride; therefore, the provisions in 40 CFR Part 63 Subpart HHHHHH do not apply.

### Reciprocating Internal Combustion Engines (RICE) (40 CFR Part 63 Subpart ZZZZ)

Final revisions to the RICE MACT were published in the Federal Register on March 3, 2010 and these revisions address existing (commenced construction prior to June 12, 2006) compression ignition engines at area sources. The insignificant activity list indicates that there are diesel-fired engines driving a generator and a fire pump at the facility. Both engines are considered emergency engines. Since these engines were in the January 1, 2006 Title V renewal permit, these engines are existing engines and are subject to requirements in MACT ZZZZ. Since these engines are considered emergency engines they are subject to management standards (oil and filter change and inspect air cleaners, hoses and belts). The source is required to comply with these requirements by May 3, 2013. The appropriate applicable requirements will be included in the renewal permit.

### Compliance Assurance Monitoring (CAM) Applicability

CAM was reviewed for these units during the first renewal (issued January 1, 2006). At that time it was determined that CAM did not apply to these units, since the Title V permit specified a continuous monitoring method for NO<sub>x</sub> (per 40 CFR Part 64 § 64.2(b)(1)(vi)). Since there have been no physical changes to the existing emissions units and no new units added since the first renewal, there is no change to the CAM applicability at this facility.

## Greenhouse Gases

In 2009 and 2010, EPA issued two rules related to Greenhouse Gases (GHG) that may affect your facility.

On October 30, 2009, EPA published a rule for the mandatory annual reporting of GHG emissions to EPA from large GHG emissions sources in 40 CFR part 98. You may be required to identify GHG emissions in future Title V permit applications. Such identification may be satisfied by including some or all of the information reported to EPA to meet the GHG reporting requirements.

### **III. Discussion of Modifications Made**

#### **Source Requested Modifications**

The source submitted their renewal application on August 10, 2009. In their renewal application, the source did not request any changes to their permit.

#### **Other Modifications**

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments, to the Thermo E & P Renewal Operating Permit with the source's requested modifications. These changes are as follows:

#### **Page Following Cover Page**

- The monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

## Section I – General Activities and Summary

- Revised the language in Condition 1.1 to address attainment status of the area in which the facility is located and corrected the citation for the definition of 8-hr ozone control area.
- Revised the language in Condition 1.4 to include Section IV, Condition 3.d and to note that only part of Condition 3.g is state-only enforceable (last paragraph). Note that Section IV, Condition 3.d (affirmative defense provisions for excess emissions during malfunctions) is state-only until approved by EPA in the SIP.
- Condition 2 (alternative operating scenario for turbine replacement) was revised to reflect current language and to clarify that only temporary turbine replacement is allowed.
- Made minor revisions to the language in Condition 3 (prevention of significant deterioration) to be more consistent with other permits. In addition, revised this condition to address the attainment status of the area in which the facility is located.
- Added a column to the Table in Condition 6.1 for the startup date of the equipment.

## Section II.1 - Turbines

- Based on EPA's response to a petition on another Title V operating permit, minor language changes were made to various permit conditions (both in the table and the text) to clarify that only natural gas is used as fuel for permit conditions that rely on fuel restriction for the compliance demonstration.
- The performance test frequency in Condition 1.5.4 was revised to every five years.

## Section II.2 – Portable Monitoring Requirements

- The portable monitoring language was updated to the most recent version.

## Section II.3 – Performance Test Requirements

- The performance test frequency was revised to every five years. In addition, the language was revised to specify that the performance test fulfills the quarterly portable monitoring requirement for that period.

## “New” Section II.5 – Emergency Compression Ignition Engines

There are two engines included in the insignificant activity list that are considered insignificant under either the provisions in Colorado Regulation No. 3, Part C, Sections II.E.3.nnn (emergency generators) or xxx (stationary internal combustion engines).

However, under the “catch-all” provisions in Regulation No. 3, Part C, Section II.E, sources that are subject to any federal or state applicable requirement, such as National Emission Standards for Hazardous Air Pollutants (NESHAPs), may not be considered insignificant activities. EPA promulgated National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines on March 3, 2010 which apply to these engines; therefore, they can no longer be considered insignificant activities. Although the units cannot be considered insignificant activities, since the Division has not adopted either the January 18, 2008 or March 3, 2010 revisions to the RICE MACT, both of which address area sources, the engines are still exempt from APEN reporting and minor source construction permit requirements.

Engine descriptions are as follows:

**Fire Pump Engine: Cummings, Model No. V-504-F2, Serial No. 3161293, rated at 187 hp, with a heat input rate of 1.7 mmBtu/hr.**

**Emergency Generator: Detroit Diesel, Model No. V7163-7300, Serial No. 20247994, rated at 745 hp, with a heat input rate of 6.7 mmBtu/hr.**

The appropriate applicable requirements for these engines are as follows:

- Except as provided for below, visible emissions shall not exceed 20% opacity (Reg 1, Section II.A.1)
- Visible emissions shall not exceed 30% opacity, for a period or periods aggregating more than six (6) minutes in any sixty (60) minute period, during fire building, cleaning of fire boxes, soot blowing, start-up, process modifications, or adjustment or occasional cleaning of control equipment, when burning coal (Reg 1, Section II.A.4)

Based on engineering judgment, the Division believes that the operational activities of fire building, cleaning of fire boxes and soot blowing do not apply to diesel engines. In addition, since these engines are not equipped with control equipment the operational activities of adjustment or occasional cleaning of control equipment also do not apply to the engines. Finally, based on engineering judgment, it is unlikely that process modifications will occur with these emergency engines. Therefore, for these units the 30% opacity provision only applies during startup.

- SO<sub>2</sub> emission shall not exceed 0.8 lbs/mmBtu (Reg 1, Section VI.B.4.b.(i)).
- 40 CFR Part 63 Subpart ZZZZ requirements – management practices (oil and filter change, inspect air cleaner and inspect hoses and belts)
- 40 CFR Part 63 Subpart A requirements

Since these engines are not subject to any emission limitations, monitoring requirements, notification and reporting requirements the requirements in §§

63.7, 63.8, 63.9 and 63.10 do not apply. In addition, since these emission units are existing the requirement in § 63.5 (preconstruction review and notification requirements) do not apply. Finally, Table 8 of Subpart ZZZZ indicates that operation and maintenance requirements in 63.6(e) do not apply. Therefore, the permit will only include the prohibition and circumvention requirements in § 63.4.

Since these units are not subject to APEN reporting or minor source construction permit requirements, the permit will not include any requirements for calculating emissions.

In their September 8, 2010 comments on the draft permit, the source requested that the requirements in 40 CFR Part 63 Subpart ZZZZ that were included in the draft permit be streamlined to clarify the substantive requirements. The Division typically includes the requirements from federal regulations as they appear in the regulation and so the Division cannot make the requested changes. However, the Division has included a simplified list of the substantive requirements for these engines in Appendix H of the permit.

#### Section IV – General Conditions

- Added a version date to the General Conditions.
- The upset requirements in the Common Provisions Regulation (general condition 3.d) were revised December 15, 2006 (effective March 7, 2007) and the revisions were included in the permit. Note that these provisions are state-only enforceable until approved by EPA into Colorado's state implementation plan (SIP).
- Removed the statement in Condition 3.g (affirmative defense provisions) addressing EPA approval and state-only applicability. The EPA has approved the affirmative defense provisions, with one exception and the exception, which is state-only enforceable is identified in Section I, Condition 1.4.
- Replaced the reference to "upset" in Condition 5 (emergency provisions) and 21 (prompt deviation reporting) with "malfunction".
- The title for Condition 6 was changed from "Emission Standards for Asbestos" to "Emission Controls for Asbestos" and in the text the phrase "emission standards for asbestos" was changed to "asbestos control".
- General Condition No. 21 (prompt deviation reporting) was revised to include the definition of prompt in 40 CFR Part 71.
- Replaced the phrase "enhanced monitoring" with "compliance assurance monitoring" in General Condition No. 22.d.
- General Condition 29 was revised by reformatting and adding the provisions in Reg 7, Section III.C as paragraph e

## Appendices

- As discussed previously, the standby diesel generator and the diesel fire pump were removed from the insignificant activity list in Appendix A and are included in Section II of the permit.
- Appendix B and C were replaced with revised Appendices.
- Changed the mailing address for EPA in Appendix D.
- Added Appendix H (simplified list of 40 CFR Part 63 Subpart ZZZZ requirements)



Total HAP Emissions (tons/yr) from Thermo Power & Electric

Emission Unit	formaldehyde	acetaldehyde	toluene	benzene	acrolein	xylene	chloroform	hexane	dichlorobenzene	nickel	cadmium	chromium	Total
Turbine	1.08	0.18	0.55	0.65	0.03	0.10							2.58
Turbine	1.08	0.18	0.55	0.65	0.03	0.10							2.58
Cooling Tower							3.16E-03						0.00
Total	2.15	0.36	1.11	1.29	0.06	0.19	3.16E-03	0.00	0.00E+01	0.00E+01	0.00E+01	0.00E+01	5.17

The heating value of natural gas was presumed to be 1020 Btu/scf